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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,773

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EXAMINER

UNDERDAHL, THANE E

ART UNIT

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1651

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,773	Applicant(s) YONEDA ET AL.	
	Examiner THANE UNDERDAHL	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Applicant's request reply received 1/11/08. Claims 1-20 are pending. Claims 1-10 are withdrawn. No claims are cancelled. Claims 1-4 and 8 have been amended. No claims are new.

Response to Applicant's Arguments— 35 U.S.C § 112

In the response submitted by the Applicant the 35 U.S.C § 112 rejection of claims 1, 2, 3 and 4 is withdrawn in light of the Applicant's amendment. Specifically the amendment that states "said microbe produces iturin A" as opposed to "accumulate[s] iturin A". This now makes it clear that this is not an **iturin A (ItA)** sequestering or collection method or additional iturin A was not added to the medium.

Response to Applicant's Arguments— 35 U.S.C § 103

In the response submitted by the Applicant the 35 U.S.C § 103 (a) rejection of claims 1-10 based on Phae et al. and Tanaka et al. is withdrawn in light of applicant's amendment that is clear that the ItA in this method is produced by the microbe and not added externally.

New Rejections Necessitated by Amendment

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohno #1 (Process Biochemistry, 1996).

These claims are drawn to a method of cultivating a *Bacillus* microbe that produces ItA and its homologues to a concentration of 1.5 g/L or more in a liquid medium containing 2% mass or more of soybean powder or its extract. The said *Bacillus* microbe continues to grow when ItA and its homologues are produced at a concentration of 1.5 g/L. Claim 8 limits that the liquid medium can contain sugars such as glucose. Claim 9 is to the *Bacillus* culture produced by the method of claim 1.

Ohno #1 teach a method of cultivating ItA in a liquid medium comprising 15 g of a solid substrate of soaked soybean powder extract (soaked okara) in a 100 ml sterile conical flask with the following liquids added: 0.8 mL of glucose, 0.075 mL of KH_2PO_4 (page 803, col 1, lines 1-15) using a 3 mL of *Bacillus subtilis* NB22 suspended in 3S medium (page 802, col 2, Preparation of seeding culture). The total volume of liquid media added to the okara fermentation is 4.1 mL. This liquid culture was fermented and produce 1.65 g/kg wet okara. Since 15 g of okara were used in the fermentation method listed above, 24.75 g of ItA and its homologues were produced. Since the liquid medium was 4.1 mL this provides an ItA concentration of 6 g/mL or 6000 g/L that the *Bacillus subtilis* NB22 microbes were able to grow and proliferate (see Figure 3).

Therefore the reference anticipates claims 1, 2, 5, 8 and 9.

Claim Rejections - 35 USC § 102 or 35 U.S.C § 103

Claims 1, 2, 3, 5, 6, 7, 8, 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohno #1 as applied to claims 1, 2, 5, 8 and 9 above and in light of support of Ohno #2 (J. of Fermentation And Bioengineering, 1995) and Ohno #3 (Biotechnology Letters, 1992).

Concerning this combination rejection M.P.E.P. § 2112 III state:

“Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both **35 U.S.C. 102** and **103**, expressed as a **102/ 103** rejection.”

The description and rejection of claims 1, 2, 5, 8 and 9 are listed in the 35 U.S.C § 102(b) rejection above. Claim 3 limits that the *Bacillus* microbe produces less than 50 ppm of surfactin in the medium during cultivation. Claims 6 and 7 limit the type of *Bacillus* microbe used to culture ItA and additional components of the medium.

Ohno #1 is silent on how much, if at any, surfactin is produce by *B. subtilis* NB22. Also Ohno #3 which uses the same strain is also silent on the production of surfactin. The Patent and Trademark Office is not equipped to conduct experimentation in order to determine whether *B. subtilis* NB22 differs and, if so, to what extent this strain produces surfactin. Accordingly, it has been established that the prior art that *B. subtilis* NB22 which has the same genus and species classification and share the property of producing ItA and makes no mention of simultaneously producing of surfactin demonstrate a reasonable probability that it is either identical or sufficiently similar that whatever differences exist are not patentably significant. Therefore, the burden of establishing novelty or unobviousness by objective evidence is shifted to Applicants.

Furthermore, merely because a characteristic of a known strain is not disclosed in a reference does not make the known strain patentable. The known strain possesses inherent characteristics which might not be displayed in the tests used by Ohno #1, Ohno #2 or Ohno #3. However, the microbe disclosed may be the same microbe as claimed. Clear evidence that the strains of the cited prior art do not possess a critical characteristic that is possessed by the claimed strain, would advance prosecution and might permit allowance of claims to Applicants' strain.

Alternatively it would have been obvious to someone skilled in the art that *B. subtilis* NB22 does not produce surfactin given additional support by Ohno #2 and Ohno #3. Ohno #2 shows that the structure of surfactin is very similar to ItA (Ohno #2, pg 517, col 1). Both are cyclic polypeptides consisting of 7 amino acids. One of ordinary skill in the art would recognize that the simple techniques of centrifugation, filtration and methanol extraction used by Ohno #1 to obtain ItA from the fermentation solution would not be specific enough to isolate individual peptides and certainly not individual peptides of the structural similarity of surfactin and ItA since they are the same cyclic shape and similar molecular weight. However Ohno #1 analyzed their samples via HPLC and was able to identify all 5 peaks present as ItA and its homologues (Ohno #1, Figure 1). Ohno #3 confirms these results in a similar HPLC analysis using *B. subtilis* NB22 to produce ItA (Ohno #3 Figure 1). Again Ohno #3 is able to identify all five peaks as ItA and its homologues and none of the peaks correspond to surfactin (Ohno #3, page 819, 1st paragraph). One of ordinary skill in the art would expect that if the structures of these compounds are so similar that some peak corresponding to surfactin would appear on

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their analysis. However no unknown peaks are taught by Ohno #1. Furthermore Ohno #2 mentions another *B. subtilis* strain (*B. subtilis* RB14) produces ItA and surfactin simultaneously and contrasts that with *B. subtilis* NB22 which they only state produce ItA (Ohno #2 page 517, col 1, paragraph 1). Given the HPLC evidence presented above and the continued silence of Ohno #2 on whether *B. subtilis* NB22 produces surfactin the Examiner concludes that *B. subtilis* NB22 does not produce surfactin unless evidence to the contrary is provided.

Similarly Ohno #1 teach *Bacillus subtilis* NB22 as the microbe to ferment and obtain ItA or its homologues from soybean extract, but does not teach *Bacillus subtilis* SD142 or a mutant of *Bacillus subtilis* SD142. As mention above, the Patent and Trademark Office is not equipped to conduct experimentation in order to determine whether or not applicants' *Bacillus subtilis* SD142 or a mutant of *Bacillus subtilis* SD142 differs and, if so, to what extent from the *Bacillus subtilis* NB22 discussed in the references. Accordingly, it has been established that the prior art strains, which have, the same genus and species classification and share the property of being able to produce, ItA and its homologues demonstrate a reasonable probability that it is either identical or sufficiently similar that whatever differences exist are not patentably significant. Therefore, the burden of establishing novelty or unobviousness by objective evidence is shifted to applicants. Therefore the references anticipate or in the alternative render obvious claims 1, 2, 3, 5, 6, 7, 8, 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno #1 as applied to claims 1, 2, 5, 8 and 9 above and in light of support of Ohno #2 (J. of Fermentation And Bioengineering, 1995) and Ohno #3 (Biotechnology Letters, 1992).

The description and rejection of claims 1, 2, 3, 5, 6, 7, 8, 9 are listed in the 35 U.S.C § 102(b)/103 (a) rejections above. Claim 4 limits that 3 % mass or less of K_2HPO_4 . Claim 10 limits that the ItA is obtained by drying the culture.

While Ohno #1 teach the addition of KH_2PO_4 but not K_2HPO_4 as limited by claim 4. One of ordinary skill in the art would recognize that both are phosphates and that the substitution of a potassium for a hydrogen will have little effect on the medium since both are art-recognized equivalents for the same purpose in culture medium and it would be obvious to substitute one for the other in the absence of evidence of criticality (M.P.E.P. § 2144.06 II).

Also while Ohno #1 teach that their ItA is isolated with methanol they are silent as to drying the ItA (Ohno #1, pg 804, col 1 1st full paragraph). However it is well known by one of ordinary skill of the art that products isolated in a volatile organic

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solvent such as methanol can be dried via roto-evaporation or a simple vacuum oven to obtain a solid product. It would be obvious to apply this known technique to the method of Ohno #1 to obtain a dry product that is easier to store and handle for future experiments ((KSR International Co. v. Teleflex Inc., 550 U.S.--, 82 USPQ2d 1385 (2007))).

Therefore the references listed above renders obvious claims 1-10.

In summary no claims, as written, are allowed for this application.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

In response to this office action the applicant should specifically point out the support for any amendments made to the disclosure, including the claims (MPEP 714.02 and 2163.06). Due to the procedure outlined in MPEP § 2163.06 for interpreting claims, it is noted that other art may be applicable under 35 U.S.C. § 102 or 35 U.S.C. § 103(a) once the aforementioned issue(s) is/are addressed.

Applicant is requested to provide a list of all copending U.S. applications that set forth similar subject matter to the present claims. A copy of such copending claims is requested in response to this Office action.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thane Underdahl whose telephone number is (571) 272-9042. The examiner can normally be reached Monday through Thursday, 8:00 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached at (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford Jr/

Primary Examiner, Art Unit 1651

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